

NOTES ON SOME CALIFORNIA FISHES, WITH DESCRIPTIONS OF TWO NEW SPECIES.

BY CARL H. EIGENMANN AND ROSA S. EIGENMANN.

Gobius townsendi sp. nov.

Types, No. 40127, U. S. Nat. Mus. San Diego Bay.

Length of largest specimen .045^m.

Robust, compressed backward. Head heavy, blunt. Profile from eye to dorsal fin straight, in front of eye rounded.

Eye 1 in the snout, 4 in length of head, about equal to the interorbital region.

Mouth very slightly oblique, the premaxillary about on a level with the lower margin of the eye. Teeth in a band in each jaw, none of them enlarged.

Scales strongly ctenoid, largest on caudal peduncle. Breast and predorsal area naked.

Distance of dorsal fin from tip of snout $2\frac{1}{2}$ – $2\frac{2}{3}$ in the length. Dorsal spines not filamentous, about half as high as the body. Space between the dorsal fins about equal to half the length of the first; soft rays higher than the spines, about $\frac{2}{3}$ height of body.

Caudal truncate, about 4 in the length. Ventrals not reaching the vent, 5 in the length. Pectorals little shorter than the head.

Sides with about eight dark cross-bars which are usually interrupted on the median line of the sides, a squarish dark spot thus meeting a light area of similar form and size, the dark predominating on the tail; a triangular spot at base of caudal, a rather large light area in front of it; top of head and lower lip evenly punctate with dark. A black spot before the spinous dorsal which is usually 1-shaped, a larger one between the dorsals and others along the back to the caudal; belly and lower portion of sides white. Ventral and pectoral fins plain; anal sparingly dotted; caudal and soft dorsal more profusely dotted, the soft dorsal and anal sometimes black posteriorly; a large black spot on posterior part of the spinous dorsal; a cluster of dots before the pectoral.

Many specimens of this species were obtained with a skimming net in tide pools and ditches on mud flats. Like the species of *Gillichthys* it has the habit of hiding in crab holes when disturbed.Specimens of *Gobius townsendi*, about .01^m in length, have the following color marks: A finely feathery pigment cell at tip of snout, one between the pupils, another at the occiput and a few smaller ones before it; a large cell on the back above the pectorals; a series of three large

cells somewhat removed from the one above the pectorals; and another series of six cells on the back somewhat removed from the series of three; a dark line extending from top of snout to origin of anal and continued as a series of large dark pigment spots to near the caudal. A few spots on the auditory capsule; a series of spots along upper portion of the air-bladder to near the caudal; a transparent bar near base of caudal. Tip of lower jaw black; sides tinged with yellow.

In the specimens of this species of about .01^m there arise on the head and sides hyaline threads corresponding to the mucus pores. These threads have no resemblance to hairs or bristles with which these structures have sometimes been compared. They are most numerous on the tail. There are 33 in the lateral line.

We have dedicated this species to Mr. C. H. Townsend, naturalist of the U. S. steamer *Albatross*.

Lepidogobius gilberti sp. nov.

Types, No. 40128, U. S. Nat. Mus. San Diego Bay.

Length of largest specimen .055^m.

Head 3-3½ (3⅔-4 in total); depth 5-5½ (6-7); D. V. 15 to 17; A. 14 to 16; Br. 5. Vert. 15+19.

Form elongate, compressed. Head long, subconical, about as high as wide; its width 2¼ in its length. Profile nearly straight from eyes to spinous dorsal, decidedly decurved in front of eyes. Eye entirely above the premaxillary level, 1 in snout, 4½ in head, one-half in interorbital.

Mouth slightly oblique; maxillary extending to below middle of eye, the lower jaw slightly included. Teeth villiform, in a broad band in each jaw, the outer series of the lower jaw somewhat enlarged.

One, rarely two, dermal flaps on inner edge of shoulder girdle.

Scales cycloid, imbedded, very small; head, nape, and breast naked.

Distance from tip of snout to insertion of spinous dorsal 2⅔ in the length. Highest dorsal spine about two-fifths the length of the head; soft dorsal rays lower. Interdorsal area about half the orbital diameter. Tip of last dorsal ray not reaching base of caudal.

Caudal broad, and rounded when expanded.

Anal similar to the soft dorsal fin. Ventral fins large, nearly reaching the vent in specimens .045^m long. Pectorals usually shorter than the ventrals. Color in life, sand color; head and body with small rust-colored spots which are dotted with black, the punctulations forming a more or less regular net-work. Dorsal fins hyaline at base, bright rust-colored above and rather broadly margined with white, everywhere black punctate except on the margins; about three groups of black dots on each ray, giving a barred appearance to these fins. Caudal margined with white, upper and lower parts of the fin rust colored, median portion dark gray; about 5 wavy, rust-like, vertical bars; entire fin dotted with black except its margin. Anal fin hyaline at base, sparsely

dotted; its middle third jet black, margined with white. Pectorals and ventrals hyaline, colorless or yellowish, sparingly black dotted and white edged. A large, conspicuous, metallic blue-black spot on the opercle; top of head blackish; belly white or yellowish; chin and throat white, sometimes punctate.

Young lighter, showing the reticulations, but the other markings faint or undeveloped.

The types of this species were obtained by a Chinaman when digging for "crawfish" in the mud flats between Roseville and La Playa.

This species differs greatly from the known species of *Lepidogobius*. It is most nearly related to *L. newberrii*, belonging to the subgenus *Eucyclogobius*. Among other differences are the number of fin rays and the rounded caudal fin.

Some specimens, which may be the young of *Gillichthys mirabilis*, were associated with this species. The eyes are smaller than in *L. gilberti*, the mouth larger, the maxillary extending considerably beyond the orbit. The abdominal area is slightly longer, the ventral fins much shorter. The number of fin rays agree with those of *gilberti*. In specimens .045^m long there is a median series of black spots on the sides, and a series of less distinct blotches along the middle dorsal line. The cranial markings are as in the adult of *Gillichthys mirabilis*.

We have dedicated this species to Mr. C. H. Gilbert, Associate Professor of Zoology, Indiana University.

Ophiodon elongatus Girard.

This species, known from Monterey and northward, has frequently been caught off San Diego this winter.

Cebedichthys violaceus Girard.

This blenny has been recorded from San Francisco to Point Concepcion. In May, 1886, Mr. C. R. Orcutt collected a single specimen at San Quentin, Lower California, 200 miles south of San Diego.

Sebastichthys chlorostictus Jordan and Gilbert.

A large number of this species were caught off San Diego February 26. Like the preceding species, it has not before been recorded south of Monterey.

Sebastichthys vexillaris Jordan and Gilbert.

The species of *Sebastichthys* evidently do not bring forth their young at any particular time. Only one of the many specimens of *S. vexillaris* examined has been found with young. The ovary is double, as in *Sebastes marinus*, but contains a much greater number of young. The internal structure of the ovary agrees with the description of the ovary

of *Sebastes marinus* given by Prof. J. A. Ryder in the Bulletin of the U. S. Fish Commission, 1886, but Professor Ryder has evidently mistaken the character of the digitations described by him. An examination of the fresh gravid ovary proves beyond a doubt that the vascular digitations described by him are merely the ruptured follicles from which the eggs have escaped. The fact, however, that the follicle persists and remains highly vascular seems to indicate that it may, as Ryder has suggested, serve to aerate the blood of the fetus.

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